AP Statistics Notes

Models

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

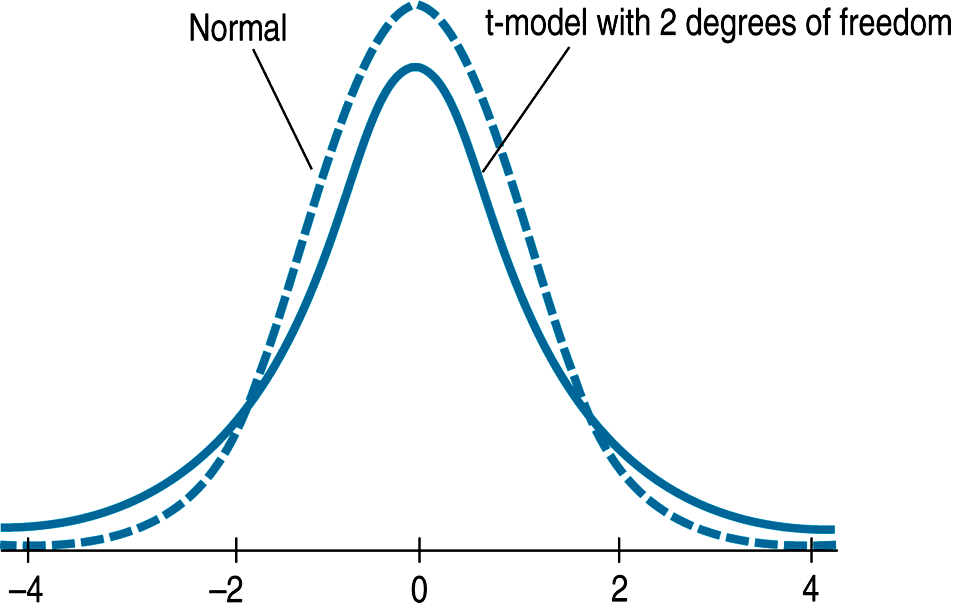
**Normal Model**

* described by the mean and the standard deviation
* used when population standard deviation is known (theoretically)
* use in tests/intervals for proportions
* when it is used as a model for a sampling distribution, the standard error is affected by changes in the sample size (increase sample size—decrease the standard error)
* compute *z-*score.



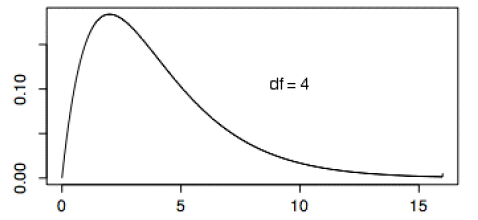
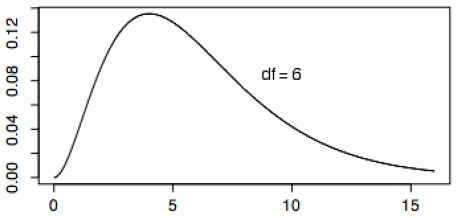
**t-Model (Gossett’s Distribution, Student’s t-Distribution)**

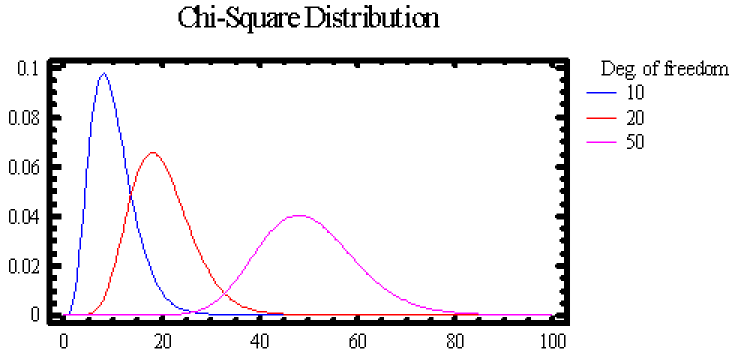
* described by the mean, standard deviation and the degrees of freedom (computed using the sample size)
* used when population standard deviation is NOT known (theoretically)
* use in tests/intervals for means
* as degrees of freedom increase, the *t*-distribution looks more and more like a normal curve.
* *t*-distribution has “fatter” tails and is “shorter” than the normal curve. Tails get “less fat” and “taller” as the degrees of freedom increase.
* Always state the degrees of freedom when describing the *t*-distribution (along with the mean and the standard deviation)
* Compute *t*-score



**Chi-Square Model**

* Described by the mean, standard deviation and degrees of freedom.
* Used when data is categorical
* With only a few degrees of freedom, the model is strongly skewed right.
* As the degrees of freedom increase, the model gets closer to being symmetric (normal), but will never get there.
* Will always have a longer tail on the right
* Mean of distribution is at *df* (degrees of freedom)
* Always “starts” at zero
* Only takes on positive values
  + Will always represent the value in a one-tailed test
  + Only ever testing if statistic is “too large”
* Only used for tests (no confidence intervals)
* Compute -score



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